Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A method of distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

using a first regulator at a first location to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to a factorized bus;

using the factorized bus to carry power from the first regulator to a remote location separated by a distance from the first location;

using a voltage transformation module ("VTM") at the remote location to convert power, via a transformer, from the factorized bus at an input voltage V_{in}, essentially equal to the voltage delivered to the bus, V_f, to a DC output voltage, V_{out}; and

using in the VTM an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current;

wherein the VTM has an output resistance, R_{out}; and

wherein the load is supplied with a voltage, V_{load}, essentially equal to the output voltage of the VTM, V_{out}, which is regulated by the first regulator using the factorized bus.

2. (Original) A method of distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

using a first regulator at a first location to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to a factorized bus;

using the factorized bus to carry power from the first regulator to a remote location separated by a distance from the first location;

using a voltage transformation module ("VTM") at the remote location to convert power from the factorized bus and deliver a load voltage, V_{load}, the VTM having an input for receiving an input voltage, V_{in}, essentially equal to the voltage delivered to the bus, V_f, and an output for

delivering an output voltage, V_{out}, essentially equal to the load voltage, V_{load}, and an output resistance, R_{out};

using a transformer in the power train of the VTM;

using in the VTM an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current;

the VTM having two or more power switches and using a power conversion duty cycle greater than 80%.

3. (Original) A method of distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

using a first regulator at a first location to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to a factorized bus;

using the factorized bus to carry power from the first regulator to a remote location separated by a distance from the first location;

using a voltage transformation module ("VTM") at the remote location to convert power from the factorized bus and deliver a load voltage, V_{load}, the VTM having two or more primary switches connected to drive a transformer, an input for receiving an input voltage, V_{in}, essentially equal to the bus voltage, V_f, and an output for delivering an output voltage, V_{out}, essentially equal to the load voltage, V_{load}; and

operating the primary switches in a series of converter operating cycles, each converter operating cycle characterized by

(a) two power transfer intervals of essentially equal duration, during which one or more of the primary switches are ON and power is transferred from the input to the output via the transformer, and

(b) two energy-recycling intervals during which the primary switches are OFF;

wherein the load voltage, V_{load}, is regulated by the first regulator using the factorized bus.

4. (Original) A method of providing a power density greater than 200 Watts/cubic-inch in point-of-load converters for efficiently supplying a regulated DC voltage, V_{load}, to a load, where the load may vary over a normal operating range, from an input source, the method comprising:

factorizing away from the point-of-load a power-conversion function of voltage regulation by using a first regulator to convert power from the input source to a controlled voltage, V_f, delivered to a factorized bus;

localizing at the point-of-load a function of DC voltage transformation by converting the factorized bus voltage at the point-of-load, V_{in}, to an output voltage, V_{out}, essentially equal to V_{load}, with a voltage transformation module ("VTM");

adapting the VTM to operate at or above 500 KHz, to convert power via a transformer, and to provide an essentially constant DC voltage gain, $K = V_{out} / V_{in}$, at a load current, and regulating the load voltage, V_{load}, by controlling the voltage of the factorized bus, V_f.

5. (Original) A method for providing scalable electric power conversion capability in which power is converted from an input source and delivered to a load at a regulated DC output voltage, where the load may vary over a normal operating range, the method comprising:

using a first regulator to convert power from the input source at a source voltage, V_{source}, to a controlled DC voltage, V_f, delivered to a factorized bus;

operating two or more voltage transformation modules ("VTMs), each comprising a transformer and an output resistance R_{out}, in parallel to convert power, via the transformers, from an input voltage, V_{in}, essentially equal to the factorized bus voltage, V_f, to a DC output voltage, V_{out};

using an essentially constant voltage gain, $K = V_{out}/V_{in}$, at a load current, in each of the VTMs;

wherein the power provided to the load is shared in inverse proportion to the output resistance by each of the VTMs; and

the output voltage provided to the load, V_{load}, is essentially equal to the output voltage of each of the VTMs, V_{out}, and is regulated by the first regulator using the factorized bus.

6. (Original) The method of claim 1 further comprising

controlling the controlled bus voltage, V_f, using a feedback signal derived from the load voltage, V_{load}.

7. (Original) The method of claim 1 further comprising using the VTM transformer to galvanically isolate the load from the factorized bus.

8. (Original) The method of claim 1 further comprising a plurality of VTMs connected to the factorized bus.

9. (Original) The method of claim 1 further comprising a plurality of VTMs connected to the factorized bus and operating in parallel to share the power delivered to the load.

10. (Original) The method of claim 9 wherein the VTMs are distributed over a multiplicity of locations.

11. (Original) The method of claim 1 further comprising programming the load voltage, V_{load}, to a selected value by using a feedback signal to control the factorized bus voltage, V_f.

12. (Original) The method of claim 1 further comprising

using an output switch in series with the output of the VTM to selectively connect the VTM to the load; and

operating the output switch to protect the load from a fault within the VTM;

wherein the load voltage is protected from VTM faults.

13. (Original) The method of claim 1 further comprising

using an input switch in series with the input of the VTM to selectively connect the VTM to the factorized bus; and

operating the input switch to protect the factorized bus from a fault within the VTM;

wherein the factorized bus voltage is protected from VTM faults.

14. (Original) The method of claim 1 further comprising

using an input device in series with the input of the VTM to selectively connect the VTM to the factorized bus; and

operating the input device to limit the voltage applied to the VTM;

wherein the VTM is protected from the factorized bus voltage.

15. (Original) The method of claim 1 further comprising:

using a front end converter at a first location to convert power from the input source and deliver a DC voltage, V_{bus}, to a first bus;

using a power regulator module ("PRM") at a second location, separated from the first location by a distance, to convert the DC voltage from the first bus and deliver the controlled DC voltage, V_f, to the factorized bus;

wherein the first regulator comprises the front end converter and the PRM.

16. (Original) The method of claim 15 further comprising

controlling the PRM to adjust the factorized bus voltage, V_f, by using a feedback signal derived from the load voltage, V_{load}.

17. (Original) The method of claim 3 wherein the VTM uses a power conversion duty cycle greater than 80 per cent over the normal operating range.

18. (Original) A method of distributing electrical power in a vehicle comprising the method of claim 1 wherein:

the first regulator is located near a source of power in the vehicle;

the factorized bus distributes the controlled DC voltage, V_f, to a plurality of locations throughout the vehicle;

a plurality of VTMs are distributed throughout the vehicle to provide power to loads distributed throughout the vehicle.

19. (Original) Apparatus for distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

a first regulator at a first location having a first input and a first output, the first regulator having circuitry adapted to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to the first output;

a factorized bus connected to the first output of the first regulator and extending to a remote location separated by a distance from the first location;

a voltage transformation module ("VTM") at the remote location having circuitry, including a transformer, adapted to convert power from an input voltage, V_{in}, essentially equal to the voltage delivered to the bus, V_f, to a DC output voltage, V_{out};

the VTM having an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current and having an output resistance, R_{out};

wherein the load is supplied with a voltage, V_{load}, essentially equal to the output voltage, V_{out}, and regulated by the first regulator using the factorized bus.

20. (Original) Apparatus for distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

a first regulator at a first location having a first input and a first output, the first regulator having circuitry adapted to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to the first output;

a factorized bus connected to the first output of the first regulator and extending to a remote location separated by a distance from the first location;

a voltage transformation module ("VTM") at the remote location having circuitry, including a transformer, adapted to convert power from the factorized bus and deliver a load voltage, V_{load}, the VTM having an input for receiving an input voltage, V_{in}, essentially equal to the voltage delivered to the bus, an output for delivering an output voltage, V_{out}, essentially equal to the load voltage, V_{load}, an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current, and an output resistance, R_{out};

the VTM further comprising two or more power switches and a power conversion duty cycle greater than 80% over the normal operating range.

21. (Original) Apparatus for distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

a first regulator at a first location having a first input and a first output, the first regulator having circuitry adapted to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to the first output;

a factorized bus connected to the first output of the first regulator and extending to a remote location separated by a distance from the first location;

a voltage transformation module ("VTM") at the remote location and having an input for receiving a DC input voltage, V_{in}, essentially equal to the voltage delivered to the bus, V_f, two or

more primary switches connected to drive a transformer with power received from the input, an output for delivering a DC output voltage, V_{out}, an output resistance, R_{out}, and a switch controller adapted to operate the primary switches in a series of converter operating cycles, each converter operating cycle characterized by

(a) two power transfer intervals of essentially equal duration, during which one or more of the primary switches are ON and power is transferred from the input to the output via the transformer,

(b) two energy-recycling intervals during which the primary switches are OFF;

wherein the load is supplied with a voltage, V_{load}, essentially equal to the output voltage, V_{out}, and regulated by the first regulator using the factorized bus.

22. (Original) Apparatus for converting power at a point-of-load from a factorized bus driven by a source of controlled DC voltage, V_f, for delivering a regulated DC voltage, V_{load}, to a load where the load may vary over a normal operating range, the apparatus comprising:

a voltage transformation module ("VTM") having an enclosure for housing power conversion circuitry, an input terminal, and an output terminal;

the power conversion circuitry comprising:

an input connected to the input terminal and adapted to receive a DC input voltage, V_{in}, essentially equal to V_f;

an output connected to the output terminal and adapted to deliver a DC output voltage, V_{out}, essentially equal to V_{load};

a transformer;

two or more primary switches connected to drive the transformer with power received from the input; and

a controller adapted to operate the primary switches in a series of converter operating cycles, each converter operating cycle characterized by

(a) two power transfer intervals of essentially equal duration during which one or more of the primary switches are ON and power is transferred from the input to the output via the transformer,

(b) two energy-recycling intervals during which the primary switches are OFF; and

(c) a period less than 2 micro seconds;

wherein the VTM has a power density greater than 250 Watts/cubic-inch, an essentially constant DC voltage gain, $K = V_{out}/V_{in}$, at a load current, and an output resistance, R_{out}, and regulates the load voltage, V_{load}, as a fraction, K, of the factorized bus voltage, V_f.

23. (Original) Apparatus for providing scalable electric power conversion capability in which power is converted from a factorized bus driven by a voltage source of controlled DC voltage, V_f, and delivered to a load at a regulated DC output voltage, V_{load}, where the load may vary over a normal operating range, the apparatus comprising:

two or more voltage transformation modules ("VTMs") connected in parallel, each VTM having

(a) an input adapted to receive a DC input voltage, V_{in}, essentially equal to V_f;

(b) an output adapted to deliver an output voltage, V_{out}, essentially equal to V_{load};

(c) a transformer;

(d) two or more primary switches connected to drive the transformer with power received from the input; and

(e) a controller operating the primary switches in a series of converter operating cycles;

(f) an essentially constant voltage gain $K = V_{out}/V_{in}$ at a load current; and

(g) an output resistance, R_{out};

wherein the power delivered to the load is shared by each VTM in inverse proportion to the output resistance of each VTM; and

the output voltage supplied to the load, V_{load}, is essentially equal to the output voltage, V_{out}, of each of the VTMs and is regulated by the factorized bus voltage V_f.

24. (Original) The apparatus of claim 19 further comprising a feedback controller for adjusting the voltage, V_f, of the factorized bus using a feedback signal derived from the load voltage, V_{load}.

25. (Original) The apparatus of claim 19 wherein the VTM further comprises galvanic isolation from the input to the output.

26. (Original) The apparatus of claim 19 further comprising a plurality of VTMs connected to the factorized bus.

27. (Original) The apparatus of claim 19 further comprising a plurality of VTMs connected to the factorized bus and operating in parallel to share the power delivered to the load.

28. (Original) The apparatus of claim 26 wherein the VTMs are distributed over a multiplicity of locations.

29. (Original) The apparatus of claim 19 further comprising an output controller for adjusting the voltage, V_f, of the factorized bus to program the load voltage, V_{load}, to a selected value.

30. (Original) The apparatus of claim 19 further comprising

an output switch connected in series between the output of the VTM and the load; and an output switch controller adapted to detect a normal state and a fault state of the VTM and operate the output switch in its ON and OFF states;

wherein the VTM is disconnected from the load in the event of a fault state.

31. (Original) The apparatus of claim 19 further comprising

an input switch connected in series between the input of the VTM and the load; and

an input switch controller adapted to detect a normal state and a fault state of the VTM and operate the input switch in its ON and OFF states;

wherein the VTM is disconnected from the factorized bus in the event of a fault state.

Please amend claim 32 as follows.

32. **(currently amended)** The apparatus of ~~of~~ claim 19 further comprising

an input device connected in series between the input of the VTM and the load; and

an input switch controller adapted to detect the factorized bus voltage and operate the input device to limit the voltage applied to the VTM;

wherein the VTM is protected from the factorized bus voltage.

33. (Original) The apparatus of claim 22 wherein the VTM operates at a greater than 90 per cent power conversion duty cycle over the normal operating range.

34. (Original) The apparatus of claim 19 wherein

the first regulator further comprises a front end converter and a power regulator module ("PRM");

the front end converter being situated at a first location and having an input connected to receive power from the input source, having an output connected to a first bus, and being adapted to convert power from the input source and deliver a DC voltage to the first bus; and

the PRM being located at a second location and having an input connected to the first bus, having an output connected to the factorized bus, and being adapted to convert power from the first bus and deliver the controlled DC voltage, V_f, to the factorized bus.

35. (Original) The apparatus of claim 30 further comprising a feedback controller for adjusting the voltage, V_f, of the factorized bus using a feedback signal derived from the load voltage, V_{load}, and applied to the PRM.

36. (Original) The apparatus of claim 19 wherein:

the VTM further comprises secondary switches to rectify power from the transformer; and

the secondary switches are turned ON and OFF essentially at times of zero voltage.

37. (Original) The apparatus of claim 19 wherein the VTM further comprises secondary switches to rectify power from the transformer; and

the secondary switches are turned ON and OFF essentially at times of zero current.

38. (Original) The apparatus of claim 19 further comprising a feedback controller for increasing the output resistance, R_{out} of the VTM using a feedback signal related to the output current, I_{out} of the VTM.

39. (Original) The apparatus of claim 19 further comprising a feedback controller for decreasing the output resistance, R_{out} of the VTM using a feedback signal related to the output current, I_{out} of the VTM.

40. The method of claim 1 or apparatus of claim 19 wherein the first regulator comprises a buck-boost switching regulator.

41. (Original) The method of claim 1 or apparatus of claim 19 wherein the first regulator comprises a buck-boost ZVS regulator.

42. (Original) The method of claim 15 or apparatus of claim 34 wherein the PRM comprises a buck-boost switching regulator.

43. (Original) The method of claim 15 or apparatus of claim 34 wherein the PRM comprises a buck-boost ZVS regulator.

Please add the following new claims.

44. (new) The method of claim 1 further comprising providing a load assembly, wherein the remote location and the load are located within the load assembly and the first location is located outside of the load assembly.

45. (new) The method of claim 4 further comprising providing a load assembly, wherein the load and the VTM are located within the load assembly and the first regulator is located outside of the load assembly.

46. (new) The method of claim 5 further comprising providing a load assembly, wherein the load and the two or more VTMs are located within the load assembly and the first regulator is located outside of the load assembly.

47. (new) The method of claim 1 further comprising enclosing the first regulator in a first enclosure and enclosing the VTM in a VTM enclosure, wherein the first regulator is located outside of the VTM enclosure.

48. (new) The method of claim 1 further comprising enclosing the first regulator in a first enclosure and enclosing the VTM in a VTM enclosure, wherein the VTM is located outside of the first enclosure.

49. (new) The method of claim 48 wherein the first regulator is located outside of the VTM enclosure.

50. (new) The method of claim 5 further comprising enclosing the first regulator in a first enclosure and enclosing the two or more VTMs in one or more VTM enclosures, wherein the first regulator is located outside of the one or more VTM enclosures.

51. (new) The method of claim 5 further comprising enclosing the first regulator in a first enclosure and enclosing the two or more VTMs in one or more VTM enclosures, wherein at least one of the two or more VTMs are outside of the first enclosure.

52. (new) The method of claim 51 wherein all of the two or more VTMs are outside of the first enclosure.

53. (new) The method of claim 51 wherein the first regulator is outside of the one or more VTM enclosures.

54. (new) The method of claim 52 wherein the first regulator is outside of the one or more VTM enclosures.

55. (new) The method of claim 44 wherein the load assembly comprises a printed circuit board ("PCB"), the remote location is on the PCB, and the VTM is mounted to the PCB.

56. (new) The method of claim 45 wherein the load assembly comprises a printed circuit board ("PCB") and the VTM is mounted to the PCB.

57. (new) The method of claim 46 wherein the load assembly comprises a printed circuit board ("PCB") and the two or more VTMs are mounted to the PCB.

58. (new) The method of claim 1 further comprising providing a subassembly wherein the first regulator is located within the subassembly and the VTM is mounted outside of the subassembly.

59. (new) The method of claim 5 further comprising providing a subassembly, wherein the first regulator is located within the subassembly and the two or more VTMs are mounted outside of the subassembly.

60. (new) The method of claim 1 further comprising providing a first subassembly and a load subassembly, wherein the first regulator is located within the first subassembly, the load and the VTM are located within the load subassembly, and the first subassembly is separate from the load subassembly.

61. (new) The method of claim 5 further comprising providing a first subassembly and a load subassembly, wherein the first regulator is located within the first subassembly, the load and the two or more VTMs are located within the load subassembly, and the first subassembly is separate from the load subassembly.

62. (new) The method of claim 1 further comprising enclosing the first regulator in a first enclosure, enclosing the VTM in a VTM enclosure, and using a load subassembly to support the load, the VTM, and the VTM enclosure, wherein the VTM is outside of the first enclosure and the first regulator is outside of the VTM enclosure.

63. (new) The method of claim 62 further comprising using the load subassembly to support the first regulator and the first enclosure.

64. (new) The method of claim 5 further comprising enclosing the first regulator in a first enclosure and enclosing the two or more VTMs in one or more VTM enclosures, and using a load subassembly to support the load, the two or more VTMs, and the one or more VTM enclosures, wherein the two or more VTMs are outside of the first enclosure and the first regulator is outside of the one or more VTM enclosures.

65. (new) The method of claim 64 further comprising using the load subassembly to support the first regulator and the first enclosure.

66. (new) The apparatus of claim 19 further comprising a load assembly, wherein the VTM and the load are mounted within the load assembly and the first regulator is mounted outside of the load assembly.

67. (new) The apparatus of claim 66 wherein the load assembly further comprises a printed circuit board ("PCB") and the VTM is mounted to the PCB.

68. (new) The apparatus of claim 19 wherein the first regulator comprises a first enclosure, the VTM comprises a VTM enclosure, and the first regulator is located outside of the VTM enclosure.

69. (new) The apparatus of claim 19 wherein the first regulator comprises a first enclosure, the VTM comprises a VTM enclosure, and the VTM is located outside of the first enclosure.

70. (new) The apparatus of claim 69 wherein the first regulator is located outside of the VTM enclosure.

71. (new) The apparatus of claim 19 wherein the first regulator is mounted to a subassembly and the VTM is mounted outside of the subassembly.

72. (new) The apparatus of claim 19 wherein the first regulator is mounted to a first subassembly, the load and the VTM are mounted to a load subassembly, and the first subassembly is separate from the load subassembly.

73. (new) The apparatus of claim 19 wherein the first regulator comprises a first enclosure, the VTM comprises a VTM enclosure, and the load and the VTM are mounted to a load subassembly, the VTM is outside of the first enclosure and the first regulator is outside of the VTM enclosure.

74. (new) The apparatus of claim 73 wherein the first regulator is mounted to the load subassembly.

75. (new) The apparatus of claim 22 wherein the power conversion circuitry comprises exactly one transformer for converting power from the input for delivery to the output.

76. (new) A method of increasing circuit density in an electronic system comprising:

distributing power to a load assembly at a DC voltage, V_f, that is N times a voltage, V_{load}, required by load circuitry on the load assembly;

providing voltage transformation on the load assembly at an essentially constant voltage gain, K= 1/N, to supply power to the load circuitry using a power transformer excited by a bipolar drive circuit;

packaging the voltage transformation in a VTM package;

providing voltage control of the DC voltage, V_f ; and

packaging the voltage control physically separate from the VTM package.

77. (new) The method of claim 76 further comprising enhancing the power density of the voltage transformation by using a power conversion duty cycle greater than 80%, and balanced switching cycles.

78. (new) The method of claim 76 wherein the VTM package comprises a height less than or equal to 0.2 inches.

79. (new) The method of claim 76 wherein the VTM package is overmolded.

80. (new) The method of claim 76 wherein N is greater than 10.

81. (new) A method of increasing circuit density in an electronic system comprising:

bussing a controlled DC voltage from a regulator to a load circuit, wherein the controlled DC voltage comprises a control range essentially equal to that which is delivered to the load circuit and a voltage, V_f, that is related to a voltage, V_{load}, delivered to the load circuit by the factor $N = V_f/V_{load}$;

providing voltage transformation on the load assembly at an essentially constant voltage gain, K= 1/N, to supply power to the load circuitry using a power transformer excited by a bipolar drive circuit;

providing voltage regulation of the DC voltage, V_f; and

packaging the voltage transformation in a VTM package;

wherein the utilization of switch and magnetic components in the power train is increased by excluding the regulation from the VTM package, and using balanced switching cycles and a power conversion duty cycle greater than 80%.

82. (new) The method of claim 81 further wherein N is greater than 10.

83. (new) The method of claim 81 further comprising providing a low profile printed circuit board ("PCB") assembly including the load circuit and the VTM package.

84. (new) The method of claim 81 wherein the VTM package comprises an overmolded package.

85. (new) A method of distributing power to a plurality of loads each having a respective DC voltage level and tolerance requirements, comprising:

unifying power distribution requirements using a plurality of VTMs to transform the respective DC voltage level requirements into a common voltage level;

distributing power at the common voltage level to the VTMs for delivery to the loads; and

controlling the unified voltage to satisfy DC voltage tolerances of the plurality of loads.

86. (new) A method of distributing power in a system comprising:

providing a first point-of-load ("POL") converter to convert power received from a bus over a normal operating input voltage range for delivery to a first load at a first load voltage;

enhancing a power density of the first POL converter by optimizing the first POL converter for a predetermined fixed input voltage, providing the first POL converter with a fixed voltage gain $K1 = V_{out1}/V_{in}$, and using a bipolar drive circuit with balanced switch cycles to drive a power transformer using a power conversion duty cycle greater than 80%;

selecting a voltage gain K1 for the first POL converter to deliver the first load voltage from a first bus voltage; and

controlling the first bus voltage to satisfy a voltage tolerance set by the first load.

87. The method of claim 86 further comprising:

providing a second POL converter to convert power received from the bus over a normal operating input voltage range for delivery to a second load at a second load voltage;

enhancing a power density of the second POL converter by optimizing the second POL converter for a predetermined fixed input voltage, providing the second POL converter with a fixed voltage gain $K2 = V_{out2}/V_{in}$, and using a bipolar drive circuit with balanced switch cycles to drive a power transformer using a power conversion duty cycle greater than 80%;

selecting a voltage gain, K2, for the second POL converter to deliver the second load voltage from the first bus voltage.

88. (new) The method of claim 86 wherein

the first POL converter comprises a plurality of POL converters,

the first load comprises a plurality of loads,

the first load voltage comprises a plurality of load voltages; and

the selecting a voltage gain comprises selecting respective voltage gains for each of the plurality of POL converters to unify voltage requirements on the first bus.

89. (new) A method of distributing power from an input source to a load on a load assembly, where the load may vary over a normal operating range, comprising:

using a first regulator to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to a factorized bus;

using the factorized bus to carry power from the first regulator to the input of a voltage transformation module ("VTM") on the load assembly, wherein the first regulator is separated by a distance from the VTM;

using the VTM to convert power from the factorized bus at an input voltage, V_{in}, essentially equal to the voltage delivered to the bus, V_f, to a DC output voltage, V_{out}, via at least one transformer and using two switches connected to drive the transformer in the VTM, the two switches being turned on alternately during alternating non-overlapping time periods during which power is transferred from the input of the VTM to an output of the VTM via the transformer; and

using in the VTM an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current; and

wherein the load is supplied with a voltage, V_{load}, essentially equal to the output voltage of the VTM, V_{out}, which is regulated by the first regulator using the factorized bus.

90. (new) A method of distributing power from an input source to a load on a load assembly, where the load may vary over a normal operating range, comprising:

using a first regulator-to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to a factorized bus;

using the factorized bus to carry power from the first regulator to the input of a voltage transformation module ("VTM"), the VTM being housed within a VTM enclosure and located on the load assembly, wherein the first regulator is outside of the VTM enclosure;

using the VTM to convert power from the factorized bus at an input voltage V_{in}, essentially equal to the voltage delivered to the bus, V_f, to a DC output voltage, V_{out}, via at least one transformer and using two switches connected to drive the transformer, the two switches being turned on alternately during alternating non-overlapping time periods during which power is transferred from the input of the VTM to the output of the VTM via the transformer; and

using in the VTM an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current; and

wherein the load is supplied with a voltage, V_{load}, essentially equal to the output voltage of the VTM, V_{out}, which is regulated by the first regulator using the factorized bus.

91. (new) A method of distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

using a first regulator to convert power from the input source at a source voltage, V_{source}, and deliver a controlled DC voltage, V_f, to a factorized bus;

using the factorized bus to carry power from the first regulator to the input of a voltage transformation module ("VTM");

using the VTM to convert power, via a transformer, from the factorized bus at an input voltage, V_{in}, essentially equal to the voltage delivered to the bus, V_f, to a DC output voltage, V_{out}, using an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current and an essentially resistive output impedance over a bandwidth approaching an operating frequency of the VTM;

wherein the load is supplied with a voltage, V_{load}, essentially equal to the output voltage of the VTM, V_{out}, which is regulated by the first regulator using the factorized bus; and

wherein the VTM is enclosed in a package that excludes the first regulator.